

Psolus fabricii* (Psolus)*Priority 2 Species of Greatest Conservation Need (SGCN)****Class:** *Holothuroidea* (Sea Cucumbers)**Order:** *Dendrochirotida* (Sea Cucumbers)**Family:** *Psolidae* (Sea Cucumbers)**General comments:** none**No Species Conservation Range Maps Available for Psolus****SGCN Priority Ranking - Designation Criteria:****Risk of Extirpation:** NA**State Special Concern or NMFS Species of Concern:** NA**Recent Significant Declines:**

Psolus is currently undergoing steep population declines, which has already led to, or if unchecked is likely to lead to, local extinction and/or range contraction.

Notes:

recent decline - Trott, in review; last record in Cobscook Bay 1975; subjected to targeted collections for public aquaria display; climate change - Arctic Province Species; understudied as dredge by-catch, professional judgement

Regional Endemic: NA**High Regional Conservation Priority:** NA**High Climate Change Vulnerability:**

Psolus fabricii is highly vulnerable to climate change.

Understudied rare taxa:

Recently documented or poorly surveyed rare species for which risk of extirpation is potentially high (e.g. few known occurrences) but insufficient data exist to conclusively assess distribution and status. *criteria only qualifies for Priority 3 level SGCN*

Notes:

recent decline - Trott, in review; last record in Cobscook Bay 1975; subjected to targeted collections for public aquaria display; climate change - Arctic Province Species; understudied as dredge by-catch, professional judgement

Historical: NA**Culturally Significant:** NA**Habitats Assigned to Psolus:****Formation Name Intertidal**

Macrogroup Name	Intertidal Gravel Shore
Habitat System Name:	Lower Intertidal **Primary Habitat** Notes: spawning, assumed juvenile feeding habitat, adult feeding habitat

Formation Name Subtidal

Macrogroup Name	Subtidal Coarse Gravel Bottom
Habitat System Name:	Coarse Gravel **Primary Habitat** Notes: spawning, assumed juvenile feeding habitat, adult feeding habitat, assumed over-wintering habitat
Macrogroup Name	Subtidal Pelagic (Water Column)
Habitat System Name:	Nearshore Notes: larval development and dispersal
Habitat System Name:	Offshore Notes: larval development and dispersal

Stressors Assigned to Psolus:

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Stressor Priority Level based on Severity and Actionability		Moderate Severity	High Severity
	Highly Actionable	Medium-High	High
	Moderately Actionable	Medium	Medium-High
	Actionable with Difficulty	Low	Low

IUCN Level 1 Threat Pollution**IUCN Level 2 Threat:** Agricultural and Forestry Effluents**Severity:** Severe **Actionability:** Moderately actionable**Notes:** Echinoderm larvae are exceptionally sensitive to excessive nutrients, toxic chemicals (including pesticides and chemical therapeutants), and/or sediments. Adults are sensitive, but comparatively to larvae, less effected.**IUCN Level 2 Threat:** Domestic and Urban Waste Water**Severity:** Severe **Actionability:** Moderately actionable**Notes:** Echinoderm larvae are exceptionally sensitive to excessive nutrients, toxic chemicals (including pesticides and chemical therapeutants), and/or sediments. Adults are sensitive, but comparatively to larvae, less effected.**IUCN Level 2 Threat:** Industrial and Military Effluents**Severity:** Severe **Actionability:** Moderately actionable**Notes:** Oil spills are toxic to species with intertidal distributions. Local scale spills have an unpredictable likelihood and actionability is moderate and influenced by response time to spills.**IUCN Level 1 Threat Biological Resource Use****IUCN Level 2 Threat:** Fishing and Harvesting of Aquatic Resources**Severity:** Moderate Severity **Actionability:** Actionable with difficulty**Notes:** Unintentional catch by commercial bottom trawling reduces population size and subsequently results in local extinctions facilitated by low growth rates, impaired role of the functional group "suspension feeders."**IUCN Level 1 Threat Climate Change and Severe Weather****IUCN Level 2 Threat:** Habitat Shifting or Alteration**Severity:** Moderate Severity **Actionability:** Actionable with difficulty**Notes:** Ocean acidification results in decreased survivorship of larvae, and growth and feeding by adult echinoderms. Likelihood is high and large scale. The ability to mitigate ocean acidification is low.**IUCN Level 2 Threat:** Temperature Extremes**Severity:** Moderate Severity **Actionability:** Actionable with difficulty**Notes:** Scarlet psolus is a cold-water species. Increased water temperatures have interactive effects with ocean pH decreasing survivorship and growth rate of larvae and adults of echinoderms. Likelihood is high (high certainty) and large scale. The ability to mitigate sea temperature change is low.**IUCN Level 1 Threat Invasive and Other Problematic Species, Genes and Diseases****IUCN Level 2 Threat:** Invasive Non-native-Alien Species-Diseases**Severity:** Moderate Severity **Actionability:** Actionable with difficulty**Notes:** Invasives such as encrusting colonial tunicates (*Didemnum vexillum*) could decrease availability of habitat and have other effects largely unknown at this time. Likelihood is high and large scale (throughout the region), so actionability is low.**Species Level Conservation Actions Assigned to Psolus:**None. *Only species specific conservation actions that address high (red) or medium-high (orange) priority stressors are*

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Conservation Action	Category: Research	Biological Priority: high	Type: on-going
Expand existing education and research among researchers and managers to improve understanding and management ability			

Stressor(s) Addressed By This Conservation Action

Domestic and Urban Waste Water

Conservation Action	Category: Policy	Biological Priority: critical	Type: on-going
Through education and collaboration, reduce the use of antifouling agents and biocides that negatively affect SGCN, and investigate alternative biofouling agents.			

Stressor(s) Addressed By This Conservation Action

Marine and Freshwater Aquaculture

Conservation Action	Category: Public Outreach	Biological Priority: high	Type: on-going
Encourage the use of more targeted fishing gear in order to reduce bycatch and habitat disturbance			

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action	Category: Research	Biological Priority: high	Type: new
Investigate the effect of various harvesting practices on the integrity of habitats and trophic and ecological systems			

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action	Category: Survey and Monitoring	Biological Priority: high	Type: on-going
Ground-truth mapped habitat and compare to historical maps to monitor change over time, may require updating mapping plans to map more frequently			

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action	Category: Research	Biological Priority: high	Type: on-going
Conduct research to support management, including but not limited to stock assessments, population genetics, population monitoring, etc.			

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action	Category: Public Outreach	Biological Priority: high	Type: on-going
Encourage the use of more targeted fishing gear in order to reduce bycatch and habitat disturbance			

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action	Category: Research	Biological Priority: high	Type: new
Research to understand how effects such as habitat modifications, population changes, and pollution can influence SGCN			

Stressor(s) Addressed By This Conservation Action

Habitat Shifting or Alteration

Conservation Action	Category: Research	Biological Priority: high	Type: new
Identify species that are resilient to ocean acidification (OA) and rises in sea surface temperature (SST).			

Psolus fabricii (Psolus)

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Order: *Dendrochirotida* (Sea Cucumbers)

Family: *Psolidae* (Sea Cucumbers)

Stressor(s) Addressed By This Conservation Action

Habitat Shifting or Alteration

Broad Taxonomic Group Conservation Actions:

Additional relevant conservation actions for this species are assigned within broader taxonomic groups in Maine's 2015 Wildlife Action Plan: Element 4, Table 4-1.

Habitat Based Conservation Actions:

Additional conservation actions that may benefit habitat(s) associated with this species can be found in Maine's 2015 Wildlife Action Plan: Element 4, Table 4-15. Click on the Habitat Grouping of interest to launch a habitat based report summarizing relevant conservation actions and associated SGCN.

The Wildlife Action Plan was developed through a lengthy participatory process with state agencies, targeted conservation partners, and the general public. The Plan is non-regulatory. The species, stressors, and voluntary conservation actions identified in the Plan complement, but do not replace, existing work programs and priorities by state agencies and partners.